

CLAIMS

I CLAIM:

1. A valve assembly, comprising:
 - a valve body having at least a fluid inlet, and a fluid outlet;
 - a valve element disposed at least partially within the valve body and moveable between (i) an open position, in which the valve body fluid inlet is in fluid communication with the valve body fluid outlet, and (ii) a closed position, in which the valve body fluid inlet is not in fluid communication with the valve body fluid outlet;
 - an actuator assembly coupled to the valve element, the actuator assembly adapted to receive one or more position control signals and operable, in response thereto, to selectively move the valve element between the open and closed positions;
 - an engagement structure coupled to the valve element and moveable therewith; and
 - a stop structure fixedly coupled to the actuator assembly and configured to engage the engagement structure when the valve is at least in one of the open and closed positions.
2. The valve assembly of Claim 1, wherein:
 - the engagement structure includes a first engagement surface and a second engagement surface;
 - the stop structure includes a first engagement surface and a second engagement surface;
 - the stop structure first surface engages the engagement structure first surface when the valve element is in the open position; and

the stop structure second surface engages the engagement structure second surface when the valve element is in the closed position.

3. The valve of Claim 1, wherein:

the actuator assembly comprises a housing; and

the stop structure is machined into the actuator assembly housing.

4. The valve assembly of Claim 1, wherein the engagement structure is machined into the valve element.

5. The valve assembly of Claim 1, wherein the valve body includes an opening substantially transverse to the flow passage, the opening adapted to receive at least a portion of the actuator assembly therein, and wherein the actuator assembly comprises:

a housing having a valve interface section, the valve interface section extending into the valve via the valve body opening; and

an actuator element disposed within the housing and adapted to respond to the position control signals,

wherein the stop structure is coupled to the actuator assembly housing valve interface section.

6. The valve assembly of Claim 5, wherein the stop structure is machined into the actuator assembly housing valve interface section.

7. The valve assembly of Claim 1, wherein:

the valve element includes a shaft;

the actuator assembly is coupled to the valve element via the shaft; and
the engagement structure is coupled to the valve element proximate the shaft.

8. The valve assembly of Claim 2, wherein the valve element includes at least a top surface, a bottom surface, and an outer surface, and wherein the engagement structure comprises:

a main body coupled to the valve element top surface and including (i) a first engagement surface configured to engage the stop structure when the valve is in the open position and (ii) a second engagement surface configured to engage the stop structure when the valve is in the closed position.

9. The valve assembly of Claim 8, wherein the engagement structure first and second engagement surfaces are disposed substantially perpendicular to the valve element top surface.

10. The valve assembly of Claim 8, wherein the stop structure comprises:

a main body including (i) a first stop surface configured to engage the first engagement surface when the valve is in the open position and (ii) a second stop surface configured to engage the second engagement surface when the valve is in the closed position.

11. A valve assembly, comprising:

a valve body having at least a fluid inlet, and a fluid outlet;

a valve element disposed at least partially within the valve body and moveable between (i) an open position, in which the valve body fluid inlet is in fluid communication with the valve body fluid outlet, and (ii) a closed position, in which the valve body fluid inlet is not in fluid communication with the valve body fluid outlet;

an actuator assembly coupled to the valve element, the actuator assembly adapted to receive one or more position control signals and operable, in response thereto, to selectively move the valve element between the open and closed positions;

an engagement structure coupled to the valve element and moveable therewith, the engagement structure including at least a first engagement surface and a second engagement surface; and

a stop structure fixedly coupled to the actuator assembly, the stop structure including (i) a first engagement surface configured to engage the engagement structure first surface when the valve is in the open position and (ii) a second engagement surface configured to engage the engagement structure second surface when the valve is in the closed position.

12. The valve of Claim 11, wherein:

the actuator assembly comprises a housing; and

the stop structure is machined into the actuator assembly housing.

13. The valve assembly of Claim 11, wherein the engagement structure is machined into the valve element.

14. The valve assembly of Claim 11, wherein the valve body includes an opening substantially transverse to the flow passage, the opening adapted to

receive at least a portion of the actuator assembly therein, and wherein the actuator assembly comprises:

 a housing having a valve interface section, the valve interface section extending into the valve via the valve body opening; and

 an actuator element disposed within the housing and adapted to respond to the position control signals,

 wherein the stop structure is coupled to the actuator assembly housing valve interface section.

15. The valve assembly of Claim 14, wherein the stop structure is machined into the actuator assembly housing valve interface section.

16. The valve assembly of Claim 11, wherein:
 the valve element includes a shaft;
 the actuator assembly is coupled to the valve element via the shaft; and
 the engagement structure is coupled to the valve element proximate the shaft.

17. The valve assembly of Claim 11, wherein:
 the valve element includes at least a top surface, a bottom surface, and an outer surface; and
 the engagement structure is coupled to the valve element top surface.

18. The valve assembly of Claim 17, wherein the first and second engagement surfaces are disposed substantially perpendicular to the valve element top surface.

19. The valve assembly of Claim 18, wherein the first and second stop surfaces are disposed substantially parallel to the first and second engagement surfaces.

20. A valve assembly, comprising:

a valve body having at least a fluid inlet, and a fluid outlet;

a valve element disposed at least partially within the valve body and

moveable between (i) an open position, in which the valve body fluid inlet is in fluid communication with the valve body fluid outlet, and (ii) a closed position, in which the valve body fluid inlet is not in fluid communication with the valve body fluid outlet;

an actuator assembly coupled to the valve element, the actuator assembly adapted to receive one or more position control signals and operable, in response thereto, to selectively move the valve element between the open and closed positions;

an engagement structure integrally formed as part of the valve element, the engagement structure including at least a first engagement surface and a second engagement surface; and

a stop structure integrally formed as part of the actuator assembly, the stop structure including (i) a first engagement surface configured to engage the engagement structure first surface when the valve is in the open position and (ii) a second engagement surface configured to engage the engagement structure second surface when the valve is in the closed position.